

EXHIBIT C



■ Heather M. Barnes
Attorney at Law
hbarnes@brouse.com

500 First National Tower
Akron, OH 44308-1471
Phone: 330.535.9999
Phone: 330.535.5711
Facsimile: 330.535.5000

1001 Lakeside Avenue
Suite 1600
Cleveland, OH 44114-1151
Phone: 216.330.6830
Facsimile: 216.330.6807

Internet: www.brouse.com

Thomas R. Lamb, Esq.
Anderson, Creager & Wittstruck, P.C.
Historic Harris House, 1630 K Street
Lincoln, Nebraska 68508

March 13, 2003

EF 155915377 US

Re: First Draft of U.S. Utility Patent Application For:
DUAL PROFILE MOLDING
Our Ref.: 30163.30225

Dear Mr. Lamb:

I have enclosed three documents for your review. You should find a first draft of the above-captioned patent application, including Figures 1-7 on 7 drawing sheets. You should also find a Declaration and Power of Attorney document (Declaration) and two copies of an Assignment. These documents are discussed further below.

Please read over the patent application for accuracy and completeness. If Mr. Klein has any changes to make, feel free to make them directly on the copy and mail it back to us for our revision.

If the application looks correct, Mr. Klein should sign the Declaration and mail it back to us. Note that Mr. Klein's home residence address is also required. By signing this document, he is identifying himself as a co-inventor of the invention described in the patent application and is granting us Power of Attorney to represent him before the U.S. Patent and Trademark Office. Note that **the Declaration should not be signed prior to making any changes in the application**. It is important that no one makes changes to the application after the Declaration is signed. Note that the Declaration places upon Mr. Klein and me a duty to disclose to the Patent Office other products and inventions, which an Examiner might believe are relevant to the investigation of your invention. If he knows of similar devices, magazine articles, etc., which are similar to his invention, please disclose them to us and provide them to us so that we can disclose them to the Examiner.

The Assignment (two identical originals enclosed) must also be signed. By signing this document, Mr. Klein is assigning his patent rights in the above-identified invention to The Goodyear Tire & Rubber Company. **Please have Mr. Klein sign both originals of the**

Thomas R. Lamb, Esq.
March 13, 2003
Page 2 of 2

Assignment Agreements and have them notarized and witnessed; then mail them back to us. Upon receipt, we will record one copy of each Assignment in the U.S. Patent and Trademark Office and keep a copy in our files for safekeeping.

I look forward to receiving your comments and/or the signed Declaration and Assignment at your earliest convenience. Please feel free to call if you have any questions or would like to discuss this case further.

Very truly yours,

BROUSE MCDOWELL



Heather M. Barnes, Esq.

HMB/cjg
Enclosures
#522554 v1

DUAL PROFILE MOLDING

1. Background of the Invention

A. Field of Invention

This invention pertains to the art of methods and apparatuses of elastomeric belts and more particularly to producing dual belts wherein the teeth or grooves on both sides of the belt are overlaid with facing fabric.

B. Description of the Related Art

Synchronous power transmission belts transmit power by engagement of teeth on the belt to tooth spaces on a sprocket. When the teeth on the belt are molded from elastomeric material they often include a facing fabric overlaying the surface of the molded teeth. The fabric layer improves the wear resistance, stiffness and frictional properties of the tooth and increases the power capacity of the belt. Dual synchronous power transmission belts are belts that have teeth or grooves on both sides of the belt. They are used where one or more driven sprockets must rotate in the opposite direction to the driving sprocket. Teeth can sometimes also be formed on the belt by grinding or milling tooth spaces in a layer of elastomeric material, but said teeth do not have a facing fabric layer. Some synchronous belts, such as those of U.S. Patent 5,209,705 have tooth arrangements which cannot be easily ground or milled.

Synchronous power transmission belts must have tooth spaces which are accurately formed and which are placed at an accurate distance from the neutral plane of the belt tensile member so that the teeth will properly mesh with the sprockets. This requirement applies to teeth on both sides of dual synchronous power transmission belts.

Synchronous power transmission belts with teeth on one side can be made by applying layers of belt materials to the circumference of a cylindrical mold which has cavities for forming the belt teeth. The first layer is usually a tooth facing fabric. The fabric may be applied as a

stretchable cylindrical layer which is made to conform to the profile of the tooth forming cavities during molding of the belt. Alternatively, the fabric may be preformed to the profile of the tooth forming cavities, in which case the tooth forming elastomer may also be preformed to fill the tooth forming cavities prior to the addition of other layers of belt materials. In each case, the thickness and perimeter of the layers already applied to the mold must support the tensile member layer at the proper distance from the mold.

The tensile member layer is applied by helical winding of cords or wires around the mold. Additional layers of elastomer and fabric are applied after the cord. When the tooth forming cavities have not been pre-filled with elastomer, some of these materials flow between the tensile cords during molding to form the belt teeth. The thickness of the materials remaining above the tensile member does not affect the accurate forming of the teeth at the required distance from the neutral plane of the tensile member. Likewise, the variation of the thickness of each layer applied after the tensile member does not affect the accurate forming of the teeth at the required distance from the neutral plane. The proper amount of materials flows between the cords to form the teeth and any surplus or shortage of material remains on the back side. The amount of material applied after the tensile member can be increased by the anticipated variation in thickness to prevent shortage of material. Any excess material can be removed by grinding or milling after the belt is formed.

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Synchronous power transmission belts with teeth on both sides must have the teeth on each side placed at the required distance from the neutral plane of the tensile member. When the teeth on the back side are ground or milled, the variation in thickness of the material applied after the cord affects only the amount of material removed, not the distance from the milled tooth to the neutral plane of the cord. This reliable process cannot be used when the back side teeth include tooth facing fabric.

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It is desirable to provide a dual synchronous power transmission belt having molded teeth on both sides wherein the teeth are covered by a facing fabric and where the teeth on both sides are placed accurately with respect to the neutral plane.

- 5 The present invention provides methods and apparatuses for forming a belt having molded teeth, at an accurate distance from the neutral plane, on both sides of the belt and for providing facing fabric overlying the teeth.

10 II. Summary of the Invention

According to one aspect of the present invention, a method for forming a dual synchronous power transmission belt is provided. The belt is formed in a press having a heatable first mold half and a heatable second mold half. The method comprises the steps of:

- 15 providing first teeth-forming recesses in the first mold half and providing second teeth-forming recesses in the second mold half;
- providing waste pockets in the first, or second, or both mold halves;
- building a belt slab comprising a tensile member material and tooth forming material positioned between first and second layers of tooth facing fabric;
- positioning the belt slab between the first and second mold halves; and,
- 20 forcing the tooth forming material into the tooth-forming recesses in the first and second mold halves by decreasing a distance therebetween to a predetermined distance whereby the first layer of facing fabric is pushed into the teeth-forming recesses in the first mold half ahead of the tooth forming material and the second layer of facing fabric is pushed into the teeth-forming recesses in the second mold half ahead of the tooth forming material, with excess material
- 25 flowing into the waste pockets.

According to another aspect of the invention, the method includes positioning a cord layer between the first and second layers of tooth facing fabric.

According to another aspect of the invention, the method includes positioning a barrier layer between the first and second layers of tooth facing fabric.

According to another aspect of the invention, the method includes positioning a cord
5 layer between the first and second layers of tooth facing fabric and adjacent to the first layer of tooth facing fabric; and, positioning a barrier layer between the first and second layers of tooth facing fabric and adjacent to the cord layer.

According to another aspect of the invention, the method includes forcing a first amount
10 of the tooth stock material to flow through the barrier layer and through the cord layer and into the first teeth-forming recesses; and, forcing a second amount of the tooth stock material to flow into the second teeth-forming recesses without passing through the cord layer.

According to another aspect of the invention, the method includes forcing a first amount
15 of the tooth stock material to flow through the barrier layer and through the cord layer and into the first teeth-forming recesses; and, forcing a second amount of the tooth stock material to flow into the second teeth-forming recesses without passing through the cord layer, and, forcing excess material to flow into waste pockets.

20 According to another aspect of the invention, the method includes forcing excess material to flow through the face fabric or barrier material and into waste pockets.

According to another aspect of the invention, the method includes forcing face fabric or barrier material to flow with the excess tooth forming material into waste pockets.

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According to another aspect of the invention, there is provided a dual synchronous power transmission belt formed according to the inventive methods disclosed herein.

III. Brief Description of the Drawings

The invention may take physical form in certain parts and arrangement of parts, a preferred embodiment of which will be described in detail in this specification and illustrated in 5 the accompanying drawings which form a part hereof and wherein:

FIGURE 1 sectional view of an open molding apparatus and an unformed, uncured belt slab according to the present invention;

10 FIGURE 2 is sectional view of a closed molding apparatus and a molded belt slab according to the present invention;

FIGURE 3 is a side view of a belt formed according to the present invention;

15 FIGURE 3A is an expanded view of a portion of the belt shown in FIGURE 3;

FIGURE 4 is a side view of a mold half showing edge channels;

20 FIGURE 5 is a side views of a mold half showing waste pockets;

FIGURE 6 is a perspective view illustrating another embodiment for the arrangement of waste pockets; and,

25 FIGURE 7 is a perspective view of a mold half having helical teeth.

IV. Description of the Preferred Embodiment

Referring now to the drawings wherein the showings are for purposes of illustrating a preferred embodiment of the invention only and not for purposes of limiting the same, FIGURE 1 shows a belt slab 10 positioned between a first mold half 14 and a second mold half 18 prior to molding any teeth in the belt slab 10. The first and second mold halves 14, 18 are heatable by an associated heating means as known to those having skill in the art.

The first mold half 14 comprises teeth-forming recesses 20 therein of a predetermined shape. The teeth formed in the first side of the belt slab may have any desired cross-sectional shape such as trapezoidal, curvilinear, curvilinear-truncated. The teeth may be formed transverse to the length of the belt or offset by a predetermined angle. Also, the teeth may be arranged into tracks of teeth to form two or more finished belts. The recesses 20 first mold half 14 therefore are machined to accommodate the desired finished tooth appearance.

The second mold half 18 also comprises teeth-forming recesses 28 therein of a predetermined shape. The teeth formed in the second side of the belt slab may also have any desired cross-sectional shape. The shape of the teeth on the second side of the belt may be similar to the teeth on the first side of the belt but it is within the scope of the present invention to provide unmatched teeth on either side of the belt.

In the preferred embodiment, the belt slab 10 includes a first layer of facing fabric 32 and a second layer of facing fabric 36. The preferred fabrics include nylon, and other facing fabrics known in the art. Tooth stock material 40 is positioned between the first and second layers of facing fabric 32, 36. As the belt teeth are molded, the tooth stock material 40 flows into the teeth-forming recesses 20, 28 and pushes the first and second layers of facing fabric 32, 36 into the recesses 20, 28. Therefore, when the belt is molded and cured, it includes teeth on both sides and those teeth are covered with facing fabric.

In the preferred embodiment, the belt slab 10 also includes a cord layer 48. In the preferred embodiment, the cord layer 48 is positioned between the first and second layers of

facing fabric 32, 36 and adjacent to the first layer of tooth facing fabric 32. Therefore, in the preferred embodiment, only one layer of tooth stock material 40 is present in the belt slab 10. For the purposes of the present invention, "layer" means a discrete area of the chosen material. Therefore, a "layer" of tooth stock material 40, as described and claimed, may actually

5 encompass more than a single ply of material, but the material is plied in an adjacent manner in the belt slab 10 to form one "layer." Likewise, a "layer" of facing fabric 32 or 36 may actually encompass one or more plies of fabric.

In the preferred embodiment, the belt slab 10 may further comprise a barrier layer 52.

10 The barrier layer 52 is positioned between the first and second layers of tooth facing fabric 32, 36 and adjacent to the cord layer 48. Alternatively, the barrier layer 52 may be placed within the tooth forming layer 40 (not shown).

FIGURE 2 is directed to the belt slab 10 during the molding process. The distance
15 between the first mold half 14 and the second mold half 18 is decreased to a predetermined distance. As shown in FIGURE 2, the teeth-forming recesses 20, 28 are occupied by the first and second layers of facing fabric 32, 36 and tooth stock material 40. In the preferred embodiment, when the belt is molded, the cord 48 is contact with the first face fabric 32 between the tooth cavities 20.

20

A comparison of the unmolded belt slab 10 shown in FIGURE 1 with the belt slab 10 shown in FIGURE 2 illustrates the changed position of portions of the tooth stock material 40. A first portion of the tooth material 40 passes through barrier layer 52 and through cord layer 48 in order to fill the first teeth-forming recesses 20 in the first mold half 14. This process is known as
25 "transfer molding" in the art since a portion of the tooth material 40 is transferred from one side of the cord layer 48 to the other in the molding process. Transfer molding is described in U.S. Patent No. 5,733,399, the entire contents of which are hereby incorporated herein by reference.

However, another portion of the tooth material 40 is forced into the teeth-forming recesses 28 in the second mold half 18 without passing through the cord layer 48. This process is known in the art as "compression molding." Therefore, as shown in FIGURE 2, when the belt slab 10 is molded a portion of the tooth material is subjected to transfer molding and another
5 portion of the tooth material 40 is subjected to compression molding. Although FIGURE 2 shows the first mold half 14 as being a lower mold half, such arrangement is merely for clarity and convenience and not by way of limiting the present invention.

Also, in FIGURES 1 and 2, the teeth-forming recesses 20 in the first mold half 14 are
10 illustrated as having a different shape than the teeth-forming recesses 28 and the second mold half 18. Again, this representation is for ease of illustration and not by way of limiting the invention. It is within the scope of the present invention to include identical teeth-forming recesses 20, 28 in each mold half 14, 18 or the teeth-forming recesses 20, 28 can be different depending on the desired application.

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With reference to FIGURE 2, the teeth-forming recesses 20 and the first mold half 14 are shown to be substantially aligned with the teeth-forming recesses 28 in the second mold half 18. This representation is merely for the ease of illustration and is not meant to limit the invention. The teeth-forming recesses 20 in first mold half 14 may be substantially aligned with the teeth-
20 forming recesses 28 in second mold half 18, they may be substantially offset, or staggered by any desired offset distance.

FIGURE 3 illustrates one embodiment of a belt 10' formed according to the methods of the invention. The belt includes inner teeth 54 disposed on an inner periphery 56 of the belt 10' and outer teeth 60 disposed along the outer periphery 62 of the belt 10'. In that way, both sets of
25 teeth may be utilized for various timing applications. In accordance with the present invention, the inner teeth 54 and outer teeth 60 each comprise facing fabric 32, 36, shown in greater detail in FIGURE 3A. Therefore, both sets of teeth are resistant to abrasion.

The preferred method of forming a dual power belt includes forming the belt in a press having a heatable first mold half 14 and a heatable second mold half 18. The first mold half 14 is provided with power teeth-forming recesses 20 therein for forming teeth on one side of the belt. The second mold half 18 is provided with power teeth-forming recesses 28 therein for forming teeth on the other side of the belt. A belt slab 10 is built so that tooth stock material 40 is positioned between first and second layers of tooth facing fabric 32,36. The belt slab 10 is positioned between the first and second mold halves 14,18. The distance between the mold halves 14, 18 is decreased to a predetermined distance so that the tooth stock material 40 is forced into the teeth-forming recesses in the first and second mold halves 14, 18. In this process, the first layer of facing fabric 32 is pushed into the power teeth-forming recesses 20 in the first mold half ahead of the tooth stock material 40 and the second layer of facing fabric 36 is pushed into said power teeth-forming recesses 28 in the second mold half 18 ahead of the tooth stock material 40. Therefore molded teeth, covered with facing fabric, are formed into both sides of the belt.

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The preferred method disclosed above is directed to a single mold as is known in the art. It is within the scope of the invention to simultaneously mold two sections of the belt using stacked molds and platens as known in the art.

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As discussed above, in prior art dual belts, the teeth are ground into the backside of the belt after the molding process is complete. At that time, excess belt material can also be ground off. However, such grinding would defeat the purposes of the present inventive dual profile molding. Therefore, the volume of tooth stock material 40 to be molded must either be precisely calculated and controlled, or means of accommodating excess material must be provided.

25

In a preferred embodiment, shown in FIGURE 4, excess tooth stock material flows toward the edges of the mold and is collected in edge waste pockets 70. In a preferred embodiment, one or both of the mold halves is preferably designed with one or more edge waste pockets 70 for collecting excess tooth stock material. Such an embodiment would suffice for

narrow molds for forming a small number of individual belts from a single molded belt slab. In a preferred embodiment, the edge waste pockets 70 intersect with tooth forming recesses 20 and are disposed to run with the length of the molded belt.

- 5 When a wider mold is utilized to provide, for example, a plurality of timing belts from a single molding operation, merely allowing excess tooth stock material to flow to the outermost edges of the mold may not accomplish the desired results. Therefore, the present invention encompasses other means of accommodating excess tooth stock material. For example, one embodiment shown in FIGURE 5 shows a mold half having a plurality of waste-pockets 80.
- 10 In a preferred embodiment, there is provided a plurality of waste pockets 80 as continuous grooves along the length, L, of the mold and intersecting with the tooth forming cavities 20. The portions of the belt slab formed between the waste pockets 80 will correspond to molded belts having accurate shape and thickness. The portion of the belt slab including excess material that has flowed into waste pockets 80 is discarded when individual belts are cut from the molded belt
- 15 slab. The waste pockets 80 can be positioned in one or both mold halves. In addition, the mold halves 14, 18 may include both edge waste pockets 70 and waste pockets 80 as needed.

FIGURE 6 illustrates optional embodiments for the arrangement of waste pockets. In another preferred embodiment, the waste pockets 80' are placed at the bottom of the tooth

20 forming recesses 20 and/or 28. The waste pockets 80' are formed as continuous channels with sufficient volume to accommodate excess tooth forming material 40 and are shaped to resist flow of tooth forming material 40 and facing fabric 32 and/or 36 into the waste pockets 80' until the tooth is fully formed. Excess material is thus molded to the outermost surface of the belt tooth where it can be removed by grinding or milling after the belt is molded. The entire width of the

25 belt slab can thus be cut into individual belts of arbitrary width. Also shown in FIGURE 6 are waste pockets 80'' which are intermittently spaced in the tooth forming recesses. These intermittent waste pockets 80'' operate in a similar manner to the waste pockets 80 shown in FIGURE 5. The waste pockets 80'' may be removed by grinding, milling or other means for

deflashing after the belt is cured. Further, the entire width of the belt slab can thus be cut into individual belts of arbitrary width.

In one preferred embodiment, the belt slab 10 is formed into a cylinder prior to being
5 molded.

The inventive method disclosed herein may also be adapted for use with single-sided toothed belts. The belt would be molded in a mold with only one half having tooth forming recesses therein. However, the belt would be molded to a predetermined thickness by
10 accommodating any excess through means disclosed in the present application. As discussed above, prior art applications require grinding the back of the belt after molding. Use of the inventive method to accommodate excess tooth material, even in single-sided belts, eliminates the need to grind the belt to a predetermined thickness. Therefore, the belt can be molded with a backing fabric on the flat, untoothed surface.

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In yet another preferred embodiment, shown in FIGURE 7, the tooth forming recesses in one or both mold halves are adapted to formed helical teeth in the molded belt. The mold may include the above described edge waste pockets 70 or any of the embodiments of waste pockets 80, 80', 80''.

20

The preferred embodiments have been described, hereinabove. It will be apparent to those skilled in the art that the above methods may incorporate changes and modifications without departing from the general scope of this invention. It is intended to include all such modifications and alterations in so far as they come within the scope of the appended claims or
25 the equivalents thereof.

Having thus described the invention, it is now claimed:

I/WE CLAIM:

1. A method for forming a dual power belt in a press having a heatable first mold half and a heatable second mold half, the method comprising the steps of:

5 providing first teeth-forming recesses in said first mold half and providing second teeth-forming recesses in said second mold half;

building a belt slab comprising tooth forming material positioned between first and second layers of tooth facing fabric;

positioning said belt slab between said first and second mold halves; and,

10 forcing said tooth forming material into said tooth-forming recesses in said first and second mold halves whereby said first layer of facing fabric is pushed into said teeth-forming recesses in said first mold half ahead of said tooth stock material and said second layer of facing fabric is pushed into said teeth-forming recesses in said second mold half ahead of said tooth stock material.

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2. The method of claim 1 wherein the step of building a belt slab further comprises:
positioning a cord layer between said first and second layers of tooth facing fabric.

3. The method of claim 1 wherein the step of building a belt slab further comprises:
20 positioning a barrier layer between said first and second layers of tooth facing fabric.

4. The method of claim 1 wherein the step of building a belt slab further comprises:
positioning a cord layer between said first and second layers of tooth facing fabric and adjacent to said first layer of tooth facing fabric; and,
25 positioning a barrier layer between said first and second layers of tooth facing fabric and adjacent to said cord layer.

5. The method of claim 4 wherein the step of forcing said tooth stock material into said teeth-forming recesses in said first and second mold halves comprises:

forcing a first portion of said tooth stock material to flow through said barrier layer and through said cord layer and into said first power teeth-forming recesses; and,

forcing a second portion of said tooth stock material to flow into said second power teeth-forming recesses without passing through said cord layer.

5

6. The method of claim 1 wherein said step of building a belt slab comprises forming said belt slab into a cylinder prior to said step of positioning said belt slab.

7. The method of claim 1 further comprising the step of:

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providing means for accommodating excess tooth stock material.

8. The method of claim 7 wherein said step of providing means for accommodating excess tooth stock material includes providing an edge channel in said first mold half.

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9. The method of claim 7 wherein said step of providing means for accommodating excess tooth stock material includes providing a waste pocket in said first mold half.

10. A method for forming a dual power belt comprising the steps of:

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building a belt slab comprising tooth stock material positioned between first and second layers of tooth facing fabric;

forming a first set of power drive teeth on a first side of said belt slab wherein said first set of power drive teeth comprise said first layer of tooth facing fabric; and,

forming a second set of power drive teeth on a second side of said belt slab wherein said second set of power drive teeth comprise said second layer of tooth facing fabric.

25

11. A method for forming a dual power belt comprising the steps of:

providing first teeth-forming recesses in said first mold half and providing second teeth-forming recesses in said second mold half;

providing waste pocket in said first mold half;

building a belt slab comprising first and second layers of tooth facing fabric and a tensile member and tooth forming material positioned between said first and second layers of tooth facing fabric, said tooth forming material having a volume sufficient to fill said first and second teeth-forming recesses and generating excess material;

- 5 positioning said belt slab between said first and second mold halves; and,
 forcing said tooth forming material into said tooth-forming recesses in said first and second mold halves by decreasing a distance therebetween to a predetermined distance whereby said first layer of facing fabric is pushed into said teeth-forming recesses in said first mold half ahead of said tooth forming material and said second layer of facing fabric is pushed into said
10 teeth-forming recesses in said second mold half ahead of said tooth forming material; and
 accommodating said excess material in said waste pocket.

12. A dual power belt formed according to the method of claim 1.

- 15 13. A method for forming a synchronous drive belt comprising the steps of:
 providing first teeth-forming recesses in said first mold half;
 providing a second mold half;
 providing waste pocket in said first mold half;
 building a belt slab comprising first and second layers of tooth facing fabric and a tensile
20 member and tooth forming material positioned between said first and second layers of tooth facing fabric, said tooth forming material having a volume sufficient to fill said first and second teeth-forming recesses and generating excess material;
 positioning said belt slab between said first and second mold halves; and,
 forcing said tooth forming material into said tooth-forming recesses in said first mold half
25 by decreasing a distance between said first and second mold halves to a predetermined distance whereby said first layer of facing fabric is pushed into said teeth-forming recesses in said first mold half ahead of said tooth forming material; and
 accommodating said excess material in said waste pocket.

14. The method of claim 13, further comprising the steps of:
deflashing said excess material after said belt has cured.

15. The method of claim 14, wherein the step of deflashing said excess material after
5 . said belt has cured includes grinding said waste pocket.

16. The method of claim 14, wherein the step of deflashing said excess material after
said belt has cured includes millig said waste pocket.

ABSTRACT OF THE DISCLOSURE

DUAL PROFILE MOLDING

- 5 Method for producing a power drive belt having drive teeth on both sides of the belt. The teeth include abrasion resistant facing fabric on both sides of the belt. The power drive teeth are molded on both sides of the belt slab in a planar mold having power teeth-forming recesses in first and second mold halves. In a preferred method, a portion of the belt is transfer molded by pressing tooth stock material through the cord layer and another portion of the belt is
- 10 compression molded. The mold is provided with edge channels and/or waste pockets to accommodate excess tooth forming material generated during the molding process.

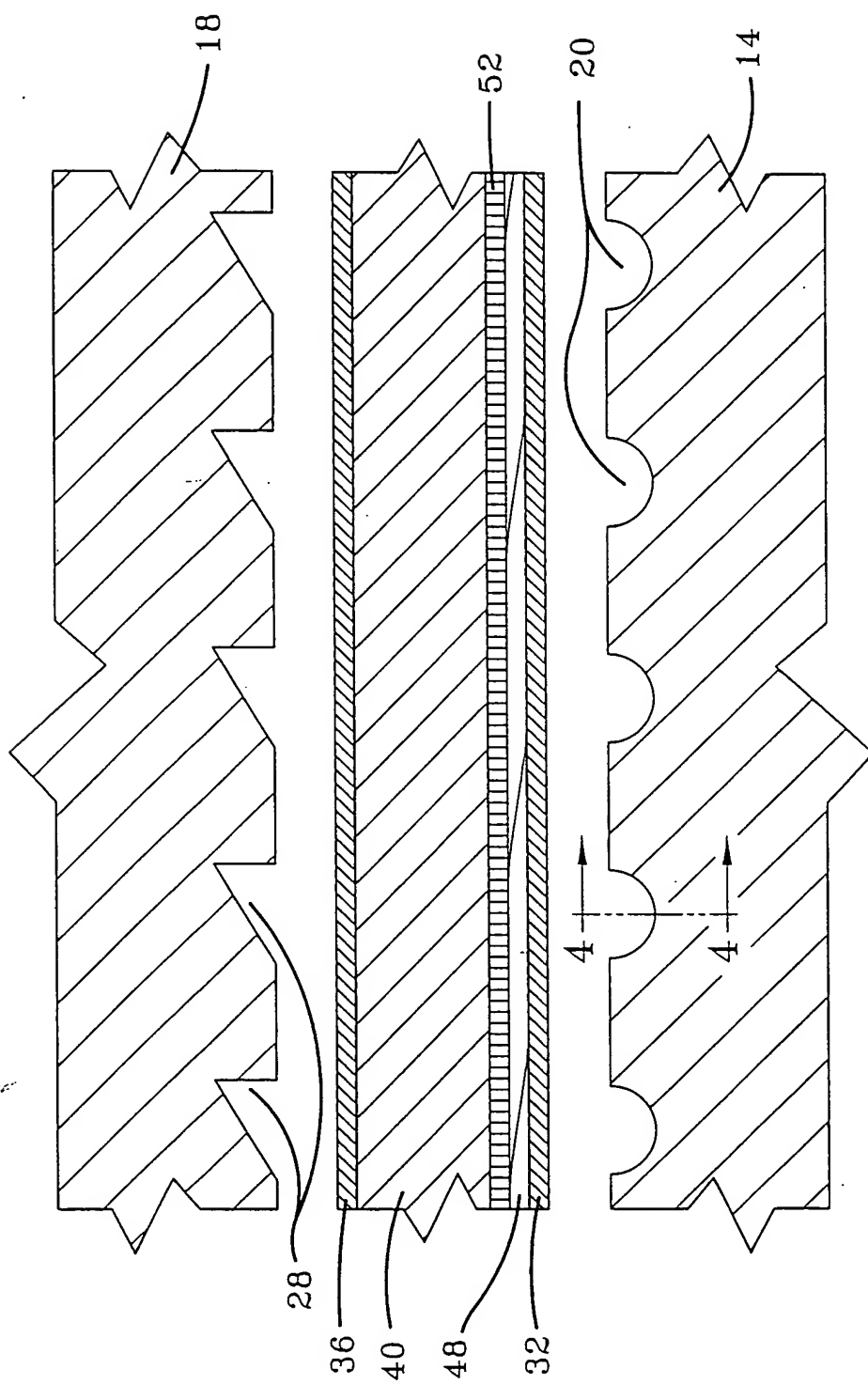


FIG-1

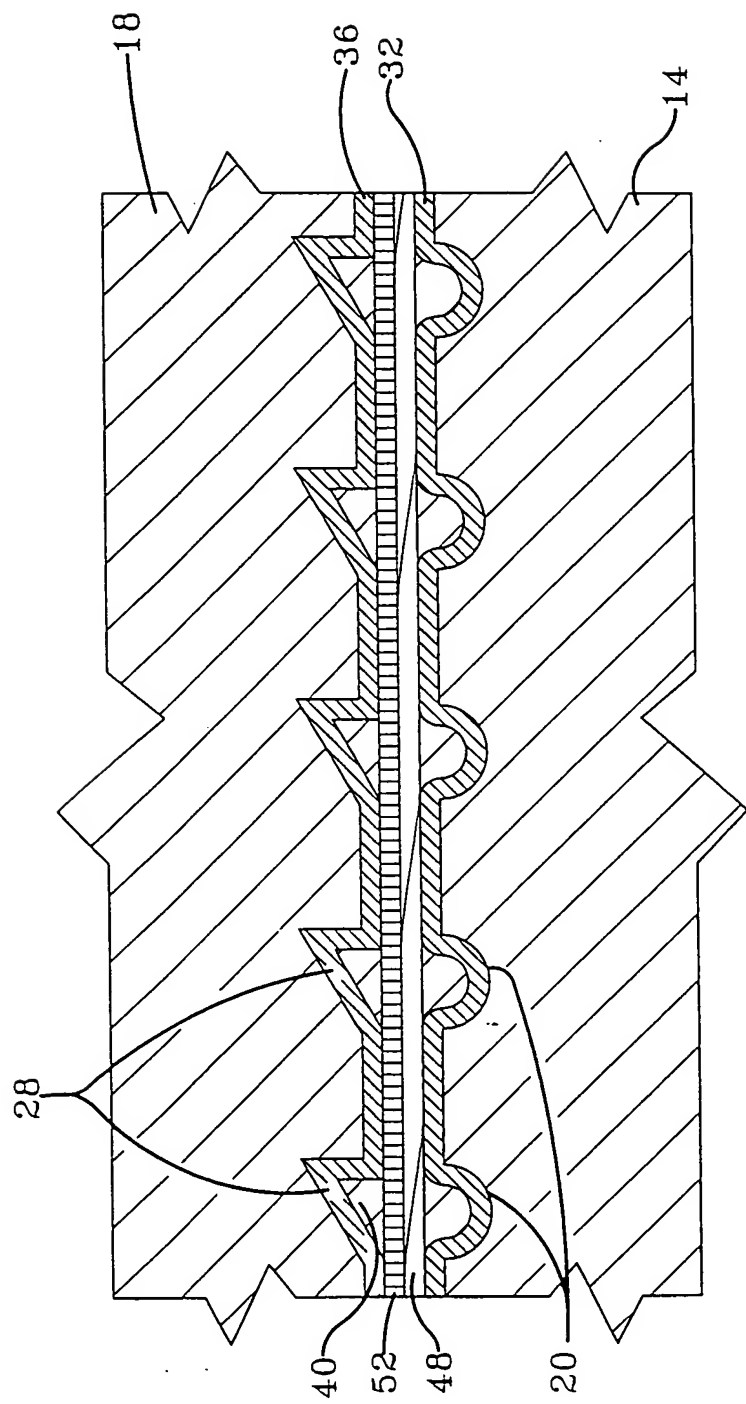


FIG-2

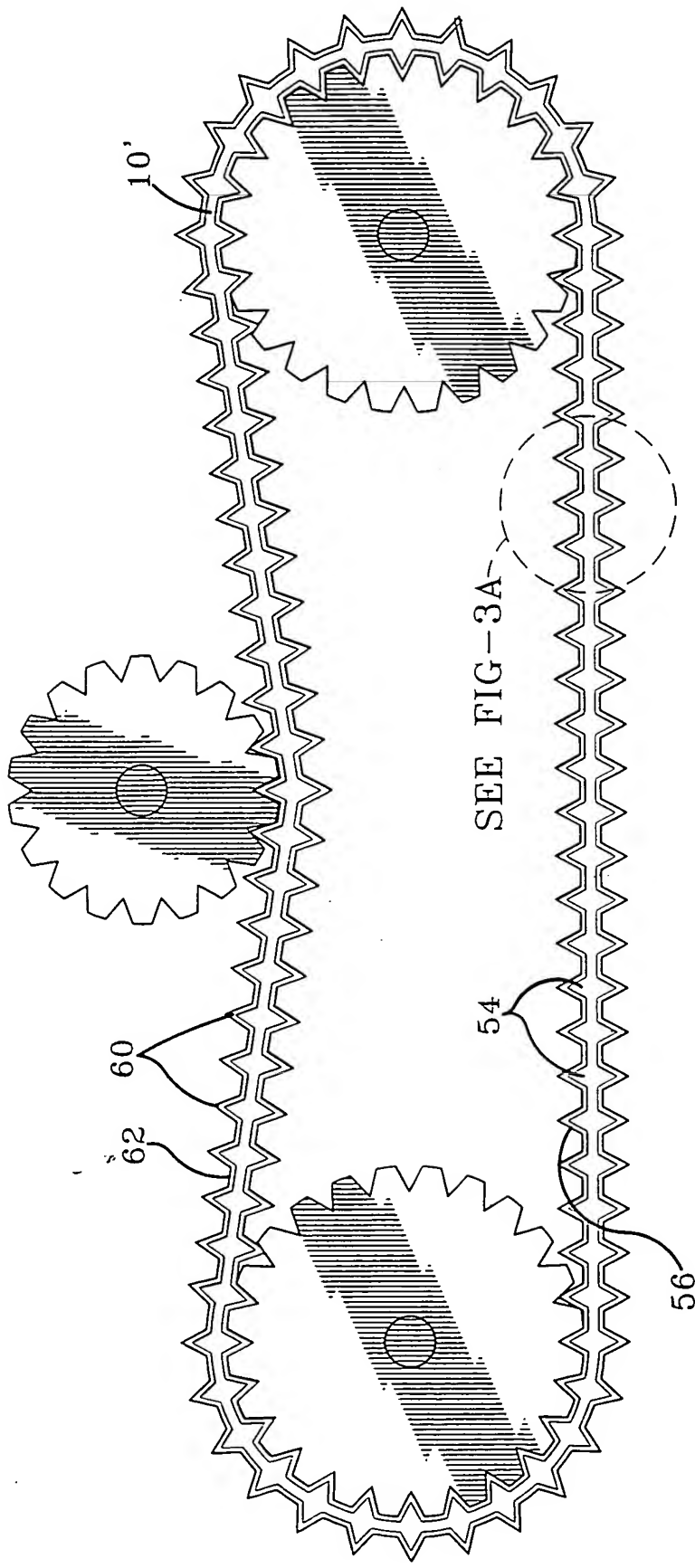


FIG-3

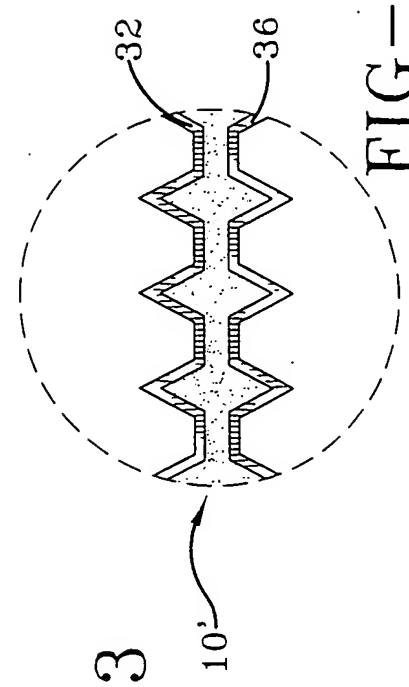


FIG-3A

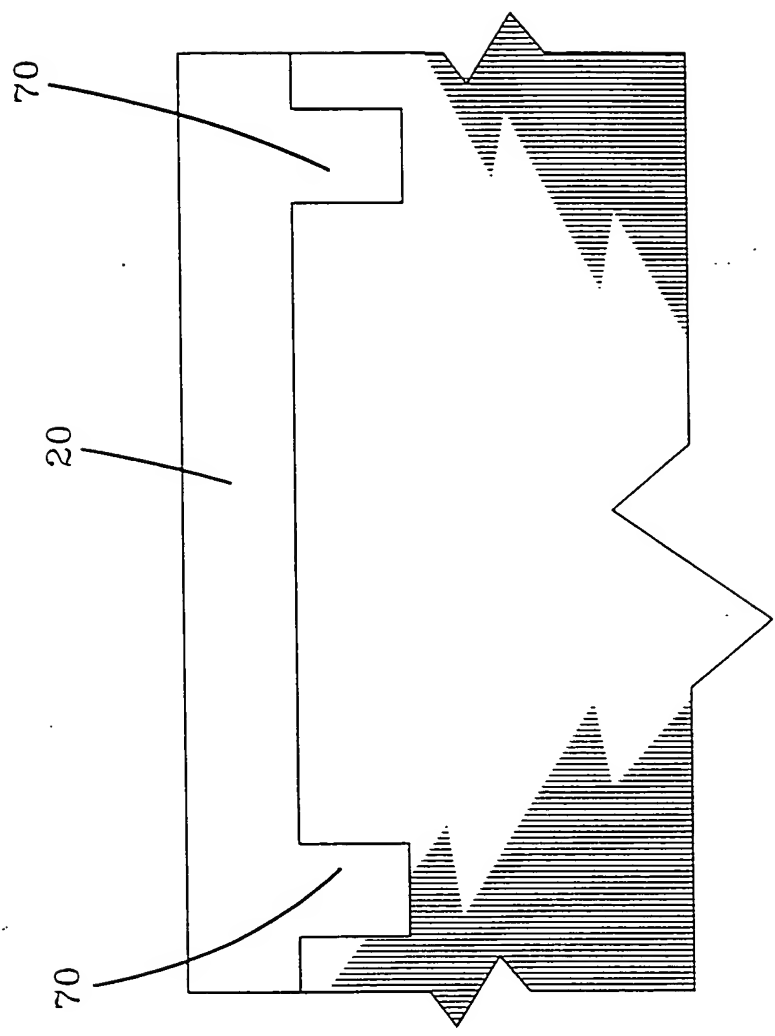


FIG-4

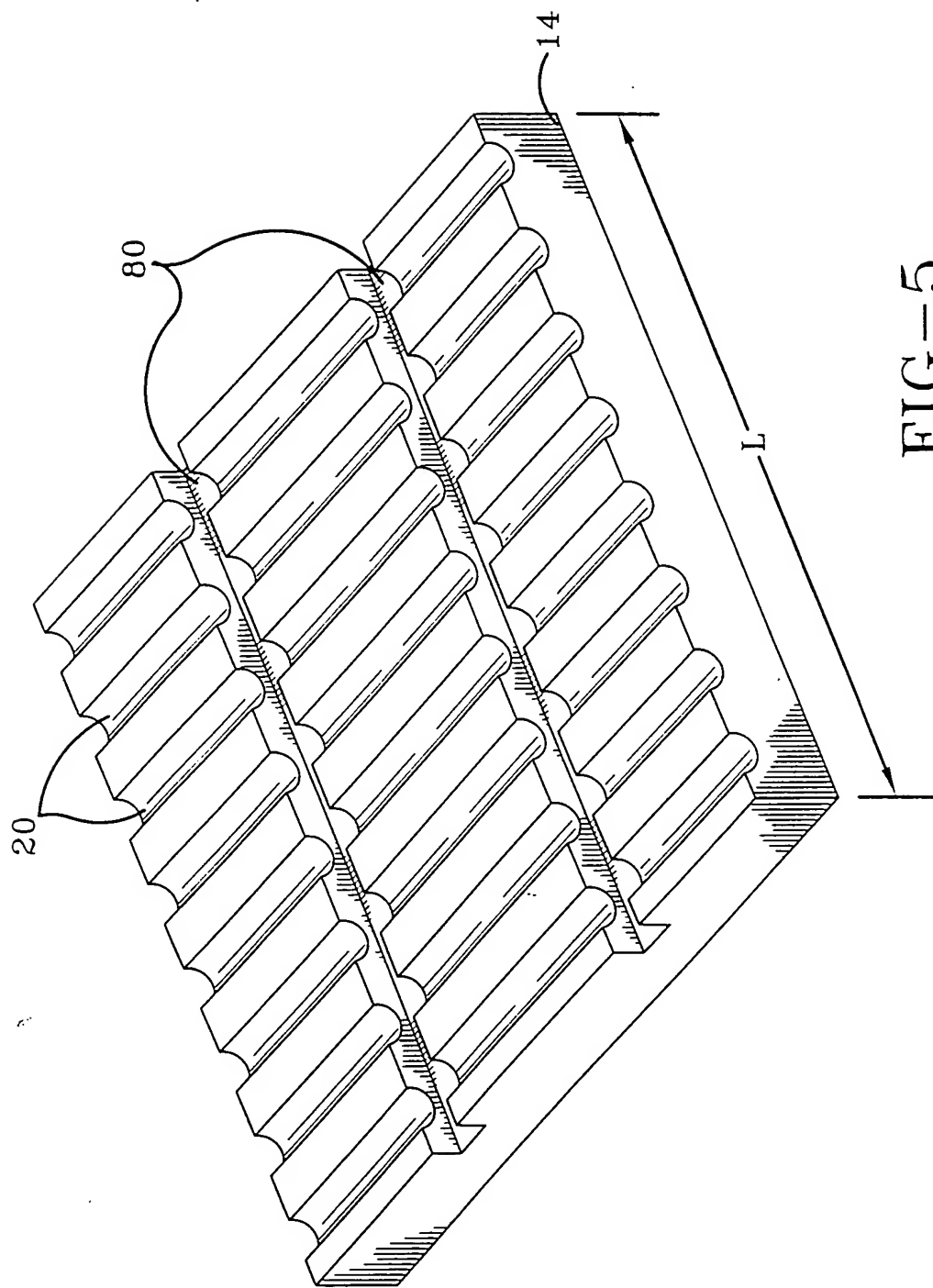


FIG-5

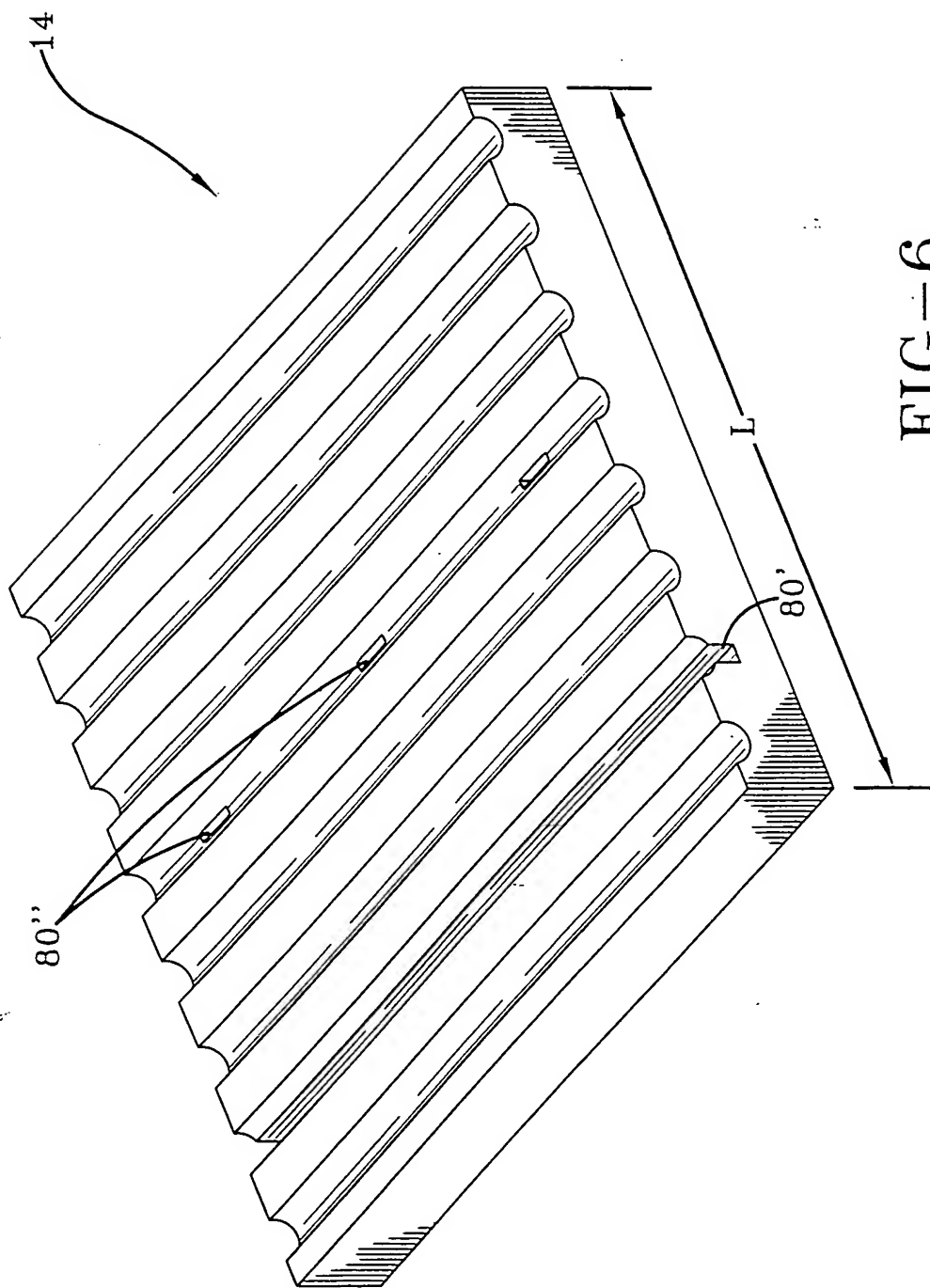


FIG-6

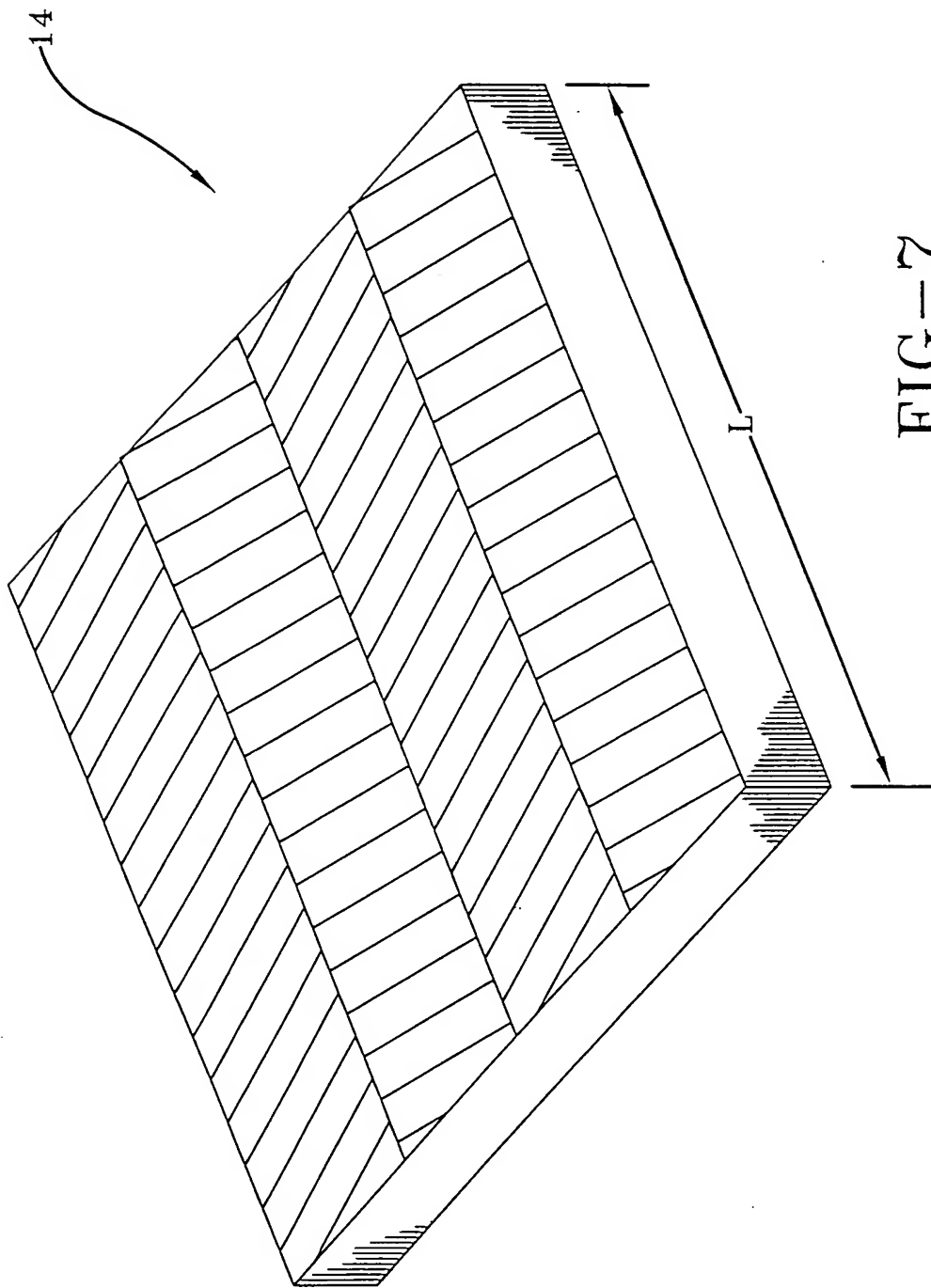


FIG-7

Docket No.: DN2002136

Serial No.: _____

Filed: _____

ASSIGNMENT

WHEREAS, WE, JASON WOLTER KLEIN, P.O. BOX 80342, LINCOLN, NEBRASKA 68501 AND DOUGLAS BRUCE WOOD, 2801 O'REILLY DRIVE, LINCOLN, NEBRASKA 68502, respectively, have invented certain improvements in DUAL PROFILE MOLDING, and described in a patent application executed the ____ day of _____, 2003, by the undersigned for filing in The United States of America, being owners of all right, title and interest in and to said application and in and to any invention described therein and having full right to convey the entire interest both legal and equitable herein assigned; and

WHEREAS, THE GOODYEAR TIRE & RUBBER COMPANY, of Akron, Ohio 44316, a corporation of the State of Ohio (assignee) is desirous of acquiring the entire right, title and interest in and to said application and said invention described therein and any and all patents to be obtained therefor, all as hereinafter set forth:

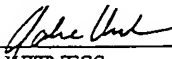
NOW, THEREFORE, in consideration of good and valuable consideration received by the undersigned, the undersigned do hereby sell, assign, transfer and set over unto said assignee, its successors and assigns, the entire right, title and interest in and to said invention or inventions, as described in the aforesaid application, in any form or embodiment thereof, and in and to the aforesaid application; and in and to any application filed in any foreign country based thereon, including the right to file said foreign applications under the provisions of the International Convention; also the entire right, title and interest in and to any and all patents or reissues or extensions thereof to be obtained in this or any foreign country upon said invention or inventions and any divisional, continuation, continuation-in-part or substitute applications which may be filed upon said invention or inventions in this or any foreign country; and the undersigned hereby authorize and request the issuing authority to issue any and all patents on said application or applications to said assignee or its successors and assigns.

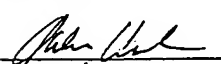

The undersigned further agree to execute all divisional, continuing, substitute, improvement, extension, reissue and other patent applications in this or any foreign country relating to said application or invention and to sign all other lawful papers and to perform all other lawful acts without further consideration, but without expense to myself (ourselves), which the assignee may deem necessary or desirable to make this Assignment fully effective including by way of example, but not of limitation, the following acts:

- (1) Prompt execution of all lawful oaths, affidavits and/or supplemental oaths required or deemed advisable by the assignee to further the prosecution of any application or applications for letters patent relating to the subject matter of this Assignment;
- (2) To cooperate to the best of our ability in the execution of all lawful documents, the production of evidence, and the giving of testimony in interference, opposition, nullification or infringement proceedings involving the said invention or improvement, applications or patents or any of them.

The undersigned hereby authorize said assignee to insert in this Assignment the serial number and filing date of the above-identified application when known.

IN WITNESS WHEREOF, the undersigned have hereunto set their hands and seals on the dates set after their signatures.

 (L.S.) _____, _____, 2003
WITNESS Jason Wolter Klein

 (L.S.)  January 13, 2003
WITNESS Douglas Bruce Wood

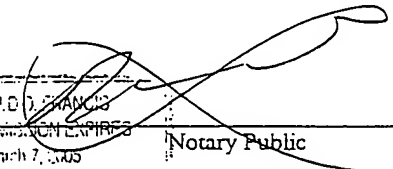
State of Nebraska)
) SS:
County of Lancaster)

On this _____ day of _____, 2003, before me personally appeared Jason Wolter Klein to me personally known, and known to me to be the person who signed the foregoing assignment, and acknowledge the signing of same as his free act and deed.

Notary Public

State of Nebraska)
) SS:
County of Lancaster)

On this 13th day of July, 2003, before me personally appeared Douglas Bruce Wood to me personally known, and known to me to be the person who signed the foregoing assignment, and acknowledge the signing of same as his free act and deed.



Notary Public

SEAL: RONALD D. FRANCIS
NOTARY PUBLIC
COMMISSION EXPIRES
March 7, 2005

Docket No.: DN2002136

Serial No.: _____

Filed: _____

ASSIGNMENT

WHEREAS, WE, JASON WOLTER KLEIN, P.O. BOX 80342, LINCOLN, NEBRASKA 68501 AND DOUGLAS BRUCE WOOD, 2801 O'REILLY DRIVE, LINCOLN, NEBRASKA 68502, respectively, have invented certain improvements in DUAL PROFILE MOLDING, and described in a patent application executed the ____ day of _____, 2003, by the undersigned for filing in The United States of America, being owners of all right, title and interest in and to said application and in and to any invention described therein and having full right to convey the entire interest both legal and equitable herein assigned; and

WHEREAS, THE GOODYEAR TIRE & RUBBER COMPANY, of Akron, Ohio 44316, a corporation of the State of Ohio (assignee) is desirous of acquiring the entire right, title and interest in and to said application and said invention described therein and any and all patents to be obtained therefor, all as hereinafter set forth:

NOW, THEREFORE, in consideration of good and valuable consideration received by the undersigned, the undersigned do hereby sell, assign, transfer and set over unto said assignee, its successors and assigns, the entire right, title and interest in and to said invention or inventions, as described in the aforesaid application, in any form or embodiment thereof, and in and to the aforesaid application; and in and to any application filed in any foreign country based thereon, including the right to file said foreign applications under the provisions of the International Convention; also the entire right, title and interest in and to any and all patents or reissues or extensions thereof to be obtained in this or any foreign country upon said invention or inventions and any divisional, continuation, continuation-in-part or substitute applications which may be filed upon said invention or inventions in this or any foreign country; and the undersigned hereby authorize and request the issuing authority to issue any and all patents on said application or applications to said assignee or its successors and assigns.

The undersigned further agree to execute all divisional, continuing, substitute, improvement, extension, reissue and other patent applications in this or any foreign country relating to said application or invention and to sign all other lawful papers and to perform all other lawful acts without further consideration, but without expense to myself (ourselves), which the assignee may deem necessary or desirable to make this Assignment fully effective including by way of example, but not of limitation, the following acts:

- (1) Prompt execution of all lawful oaths, affidavits and/or supplemental oaths required or deemed advisable by the assignee to further the prosecution of any application or applications for letters patent relating to the subject matter of this Assignment;
- (2) To cooperate to the best of our ability in the execution of all lawful documents, the production of evidence, and the giving of testimony in interference, opposition, nullification or infringement proceedings involving the said invention or improvement, applications or patents or any of them.

The undersigned hereby authorize said assignee to insert in this Assignment the serial number and filing date of the above-identified application when known.

IN WITNESS WHEREOF, the undersigned have hereunto set their hands and seals on the dates set after their signatures.

_____ WITNESS	(L.S.) _____ Jason Wolter Klein	_____ 2003
_____ WITNESS	(L.S.) _____ Douglas Bruce Wood	_____ January 13, 2003

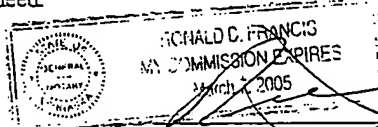
State of Nebraska)
) SS:
County of Lancaster)

On this _____ day of _____, 2003, before me personally appeared Jason Wolter Klein to me personally known, and known to me to be the person who signed the foregoing assignment, and acknowledge the signing of same as his free act and deed.

Notary Public

State of Nebraska)
) SS:
County of Lancaster)

On this 13TH day of JANUARY, 2003, before me personally appeared Douglas Bruce Wood to me personally known, and known to me to be the person who signed the foregoing assignment, and acknowledge the signing of same as his free act and deed.



Notary Public

Docket No.: DN2002136**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled DUAL PROFILE MOLDING the specification of which (check one)

X is attached hereto.

_____ was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56.

I hereby claim the benefit under 35 U.S.C. §119(e) of any United States provisional application(s) listed below:

(Application Serial No.) (Filing Date)

(Application Serial No.) (Filing Date)

I hereby claim the benefit under 35 U.S.C. §120 of any United States application(s) or §365 of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. §112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.) (Filing Date) (Status)(patented, pending, abandoned)

(Application Serial No.) (Filing Date) (Status)(patented, pending, abandoned)

POWER OF ATTORNEY

As named inventor(s), I or we hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

John D. DeLong	44,648	Roger D. Emerson	33,169
Bruce J. Hendricks	30,262	John M. Skeriotis	43,129
David L. King	33,925	Timothy D. Bennett	42,312
Nancy T. Krawczyk	38,744	Marcella R. Louke	41,163
Richard B. O'Planick	29,096	Daniel A. Thomson	43,189
Alvin T. Rockhill	30,417	Heather M. Barnes	44,022
Henry C. Young	22,329	Timothy D. Smith	50,880
George W. Moxon II	26,615		

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statement may jeopardize the validity of the application or any patent issuing thereon.

Full name of sole or first inventor (given name, family name) Jason Wolter Klein

Inventor's signature _____ Date _____

Residence 4101 Normal Blvd. No. 11, Lincoln, Nebraska 68506 Citizenship USA

Post Office Address P.O. Box 80342, Lincoln, Nebraska 68501

X Additional inventors are being named on separately numbered sheets attached hereto.

Full name of second joint inventor (given name, family name) Douglas Bruce Wood

Inventor's signature Douglas Bruce Wood Date December 30, 2002

Residence 2801 O'Reilly Drive, Lincoln, Nebraska 68502 Citizenship USA

Post Office Address 2801 O'Reilly Drive, Lincoln, Nebraska 68502

SEND CORRESPONDENCE TO:

Roger D. Emerson, Esq.
BROUSE McDOWELL
500 First National Tower
Akron, Ohio 44308-1471

DIRECT TELEPHONE CALLS TO:

Roger D. Emerson, Esq.
BROUSE McDOWELL
500 First National Tower
Akron, Ohio 44308-1471
330-535-5711
330-253-8601 fax no.

Page 2 of 2 page(s)